

**MUMBAI METRO RAIL CORPORATION LIMITED**

**Mumbai Metro Line-3 Project**

**IFB No: MM3-CBS-DEQ-9-05**

**Design, Manufacture, Supply, Installation, Testing & Commissioning of A) Synchronized Under Floor Lifting Syatem B) Synchronized Mobile Lifting Jacks, and C) Bogie Turn Tables**

**Response to Bidders' Queries (SET-1)**

Sr. No.	Part No. & Section No.	Clause No.	Page No.	Bid Document Clause Description	Bidder's Query /Clarification	MMRC Response
1	Part 1 Section I (ITB)	4.1	ITB 5	<p>A bidder may be a firm that is a single entity or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a JV:</p> <p>(a) all member shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms, and</p> <p>(b) the JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during Contract execution.</p>	<p>It may please be clarified whether Joint Venture (JV) includes Consortium also, which is a non-incorporated entity of firms. Various Bidding Forms given in Section 4A mention that the information is to be filled in for the Bidder and for each member of a JV excepting Bid Form 13 FIN-1 Financial Situation at Page No.18 of 35 where consortium is also mentioned. It is requested to permit the consortium also to be an eligible bidder.</p>	<p><b>Please refer Sr No 1 of Addendum No. 1.</b></p>
2	Invitation for Bids	21.1	5 of 7	<p>The Bid Security amount shall be:</p> <p>of INR 40,00,000/- (Indian Rupees Forty Lakhs only) or USD 55000/- (US Dollars Fifty-five thousand only)</p>	<p>In this tender, the currency for Bid Security Submission are restricted only to INR &amp; USD. We request you to may permit us to submit Bid Security in EURO currency also.</p>	<p><b>Please refer Sr No 2 of Addendum No. 1.</b></p>
3	Part 1 Section II	ITB 18.5(a)	4 of 7	<p><b>Schedule No. 1 - Plant, to be supplied from abroad</b> The prices shall be quoted on DDP basis (including cost of carriage, customs duty and Insurance up to the destination) - Named place of destination is Mumbai Metro Line 3, Depot site, Mumbai, India. The scope of Contractor's works shall be as described in Schedule No. 1 of Pricing Document, Section IV-B.</p>	<p>As we are Germany based foreign manufacturer with no office in India, we can arrange for the clearance and forwarding services at Customs, but the Custom duty and other local taxes shall be paid by MMRC on actual basis, as per assessment and Bill of entry. We agree to deliver the plant till depot therefore request MMRC to modify delivery terms to DAP basis instead DDP basis. This has been done by all Indian Customers who asked for depot delivery. MMRC may please amend same suitably as requested above.</p> <p>It is requested to enable us to quote competitive price please clarify that the various requirements which are relating to Indian bidders are not applicable for foreign bidders like us. This aspect is necessary to review also all aspects covering tax issues/tax orders as we are German Company not liable for any Indian taxes. The taxation /duties requirements to be dealt by purchaser themselves.</p>	<p>MMRC is following the system of DDP in all contracts. No change is considered in this contract too. <b>Bid conditions prevail.</b></p>
4	Part 1 Section II	ITB 22.2	5 of 7	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of the Power of Attorney and the document shall be notarized. In case of a foreign company, the document shall be Apostille or Authenticated by Indian Embassy/Consulate in that country, and shall be attached to the Bid.</p>	<p>Is it really necessary to get a Confirmed Apostille for the MD Signing quotation documents ?</p>	<p>Yes. <b>Bid conditions prevail.</b></p>



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5	Part 1 Section III	2.4.2	9 of 14	<p>Specific Experience:</p> <p>A) Contracts (Design, Manufacture, Supply, Installation, Testing &amp; Commissioning) for a minimum number, as specified below, of similar Equipment for the respective item has been satisfactorily and substantially completed for Metro/Railway/MRT systems as a prime Contractor, viz, OEM (single entity or JV member) between 1st January 2009 and the latest Bid submission date.</p> <p>Pit Jacks- Eight (08) sets for 3 car-train and above including at least two (02) sets of 6-car train and above.</p> <p>Mobile Jacks- Eight (08) sets of 3-car train and above including at least two (02) sets of 6-car train and above.</p> <p>Turn Tables- Ten (10) numbers.</p> <p>B) Out of the above Contracts completed, at least one (01) Contract shall have been completed outside the country of manufacture of the Equipment or in India for each of the three (03) items under the Contract.</p> <p>C) A minimum number of respective Equipment, as specified below shall be in operation in Metro/Railway/MRT systems with satisfactory performance over a minimum period (02) years after commissioning and supported by a performance certificate from the end-client. Out of these Equipment, at least one (01) Equipment of each type shall have been in operation outside the country of manufacture or in India.</p> <p>Pit Jacks- Three (03) sets for 3-car train and above including at least one (01) set of 6-car train and above.</p> <p>Mobile Jacks- Three (03) sets for 3-car train and above including at least one (01) set of 6-car train and above.</p> <p>Turn Tables- Three (03) numbers of static load 10 Tons and above.</p>	The requirement of experience outside the country of manufacture of equipment or in India for supply contracts and performance experience need to be reviewed and deleted as Pit Jacks, Mobile Jacks and Turn Table are independent stand-alone equipments and are not interfaced or integrated with any other system. Performance of these equipment does not vary from country to country nor is dependent on climatic conditions.	<b>Bid conditions prevail.</b>
6	Part 1 Section III	2.5	13 of 14	Bid Capacity	BID CAPACITY: Due to the Project Time Over-runs, the Bid Capacity Calculations of today will not hold good for tomorrow as the Vendor/Tenderer may complete some present commitments or have new commitments ?	The Bid Capacity calculations shall be carried out as per the guidelines expalined in Clause 2.5. <b>Bid conditions prevail.</b>
7	Part 1 Section III	2.6.1 a), b), c) & d)	13 of 14	<p>2.6.1 Subcontractors/ manufacturers for the major items of supply or services as listed at Clause No 2.10, Section VI-B, Technical Specifications, Part 2 must meet the following minimum criteria:</p> <p>(a) The subcontractors/manufacturers for the major items of supply, referred in Clause 2.6.1 above must have a cumulative experience of minimum five (05) years in the design and manufacturing of respective item.</p> <p>(b) The subcontractors/manufacturers for the major items of services, referred in Clause 2.6.1 above must have a cumulative experience of minimum three (03) years in the similar nature of work.</p> <p>(c) The subcontractors/manufacturers for the major items of supply must have supplied similar item for at least four (04) Contracts of similar equipment in last ten (10) years.</p> <p>(d) The subcontracted major item supplied by the subcontractor/manufacturer shall have been in use with satisfactory service in at least two (02) different locations for a period of two (02) years in any Metro/ Railway project. The Contractor shall produce a certificate with supporting documents of satisfactory performance of the major item from the Client before taking NoNO for the Sub-contractor after award of the Contract.</p>	The sub-assemblies / major part of a Whole Machine, no sub - contractor / manufacturer can give performance certificate from the end user for each assemblies separately. They have to be evaluated from the performance of the machine as a whole unit. Therefore, we request you to kindly delete this requirement and associated Bid Form 21.	<b>Bid conditions prevail.</b>



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8	Part 2 Section VI-B	2.10	11 of 21	Major items of supply from Sub –Contractors/ Manufacturers: The following are the major items of supply or service in the equipment:  a) Lifting Motor b) Gear Box c) Lifting Spindle / Screw  The contractor shall of these items propose the sub – contractors / manufacturers of these items during design stage who is satisfy the experience condition specified in clause No. 2.6 Section III, Part I for Notice of No Objection	The sub-assemblies / major part of a Whole Machine, no sub - contractor / manufacturer can give performance certificate from the end user for each assemblies separately. They have to be evaluated from the performance of the machine as a whole unit. Therefore, we request you to kindly delete this requirement and associated Bid Form 21.	Performance Certificate of the Machines as a whole unit may be submitted with a refrence that the offered sun-assemblies/major part(s) had been used. <b>Bid conditions prevail.</b>												
9	Part 1 Section IV-A	Bid Form 5	8 of 35	A notarized copy of Memorandum of Understanding (MOU) relating to the composition of the Bidder shall be submitted. For guidance, if the Bidder is a joint venture or a consortium then the joint venture or consortium agreement is to be submitted by the Bidder. If the Bidder is an entity established or to be established for this Contract, details of the shareholders' agreement or proposed shareholders' agreement shall be supplied together with the percentage participation and percentage equity in the agreements.	JOINT VENTURE : Can the JV MOU be Notarized in India only or it has to be Notarized in the Country of the Foreign Partner as well ?	JV/Consortium Agreement can be notarised anywhere as per Notary jurisdiction. However document issued in another country to be attested or legalized by the Indian Embassy or Consulates General in that country. <b>Bid conditions prevail.</b>												
10	Part 1 Section IV-A	Bid Form 22,Sr. No. 1-3	28 of 35	<table border="1"> <thead> <tr> <th>Sr. No.</th> <th>Required Functional Guarantee</th> <th>Value of Functional Guarantee of the Proposed Plant and Equipment</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Reliability Requirements</td> <td>Clause 2.11, Section VI-B, PART 2</td> </tr> <tr> <td>2</td> <td>Availability Requirements</td> <td>Clause 2.11, Section VI-B, PART 2</td> </tr> <tr> <td>3</td> <td>Maintainability Requirements</td> <td>Clause 2.11, Section VI-B, PART 2</td> </tr> </tbody> </table>	Sr. No.	Required Functional Guarantee	Value of Functional Guarantee of the Proposed Plant and Equipment	1	Reliability Requirements	Clause 2.11, Section VI-B, PART 2	2	Availability Requirements	Clause 2.11, Section VI-B, PART 2	3	Maintainability Requirements	Clause 2.11, Section VI-B, PART 2	Are there 3 different Guarantees to be submitted (viz, Reliability/Availability/Maintainability) or 1 Performance Bank Guarantee equivalent to 10% of the Contract Value ? Please kindly clarify .	No separate Guarantees are required against Reliability, Availability and Maintainability. The Contractor has to submit only Performance Bank Guarantee as per Clause No PC 13.3.1, Section VIII, Part 3. <b>Bid Conditions prevail.</b>
Sr. No.	Required Functional Guarantee	Value of Functional Guarantee of the Proposed Plant and Equipment																
1	Reliability Requirements	Clause 2.11, Section VI-B, PART 2																
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11	Part 1 Section IV-B	1.2.5	2 of 25	<b>Exemption in state taxes:</b> In case of any waiver/ reduction subsequent to the Base Date for GST (CGST, SGST, IGST, UGST etc.) and any other tax, duties, levy, cess, etc, Custom duties in full or part thereof, the Contractor will be required to obtain exemption/refund of such taxes, duties etc., from the concerned authorities. The Contractor shall arrange for the remittance of the refund so obtained to the Employer. In case of failure by the Contractor to obtain and remit the refund within reasonable time (to be decided by the Project Manager & intimated to Contractor) to the Employer, the same will be recovered by the Employer from the amounts due as payment to the Contractor or as debt due from the Contractor If the Contractor fails to take the required action to obtain refund or exemption, the Employer shall take action in accordance with the Conditions of Contract.	As mentioned vide above point 1 (Sr No 3), we are a foreign company do not know taxation on your project and if there is any exemptions on the Import project it will be benefitted to Purchaser MMRC and it depends on the Registration in your particular state how it have been dealt and nature etc. If state govt has given exemption on Custom/import, taxes then there will be no applicability of such expenses. Such responsibility do not serve anything but only confusion and we could not concentrate on our actual nature of Business. Please amend this accordingly. Also Statement no-1 Pricing format, Appendix A for Tax duty breakup may please modified by removing Custom duty applicability as requested. May be amended to DAP basis.	The taxes to be quoted in the Bid shall be as applicable on the Base Date of the Contract. Any changes subsequent to the Base Date shall be dealt with as per Clause No 14.4 and 36.1 of Section VII, Part 3. <b>Bid conditions prevail.</b>												



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12	Part 2 Section VI-B	1.2.6	3 of 25	<p>Record of Taxes, Duties etc.</p> <p>The Bidder shall also give breakdown of his fixed Price clearly giving the Custom Duty, GST (CGST, SGST, IGST, UGST etc.) and any other Tax, levy, Cess, etc. along with the applicable rate in the Form attached as Appendix A of Schedule No. 6 (Grand Summary).</p> <p>The Contractor shall maintain complete records in respect of payments made by them for taxes, duties, Octroi, and other levies payable to various authorities (except Income Tax or Corporate Tax) and advise the Employer the summary of such payment every quarter in a format advised by the Employer during execution of the Contract.</p> <p>The detailed records shall however remain open for inspection by the Employer/ Project Manager at any time and copies of the records shall be furnished as required by the Project Manager. Should there be any statutory changes in taxes &amp; duties with respect to the tax structure as on base date, the amount payable/recoverable from the Contractor in accordance with the conditions of the Bid will generally be calculated based on these records. However, Employer at his sole discretion, if not satisfied with the veracity of records or records are incomplete or otherwise, may separately determine the amount payable/recoverable from the Contractor in accordance with the conditions of the Bid, which shall be final and binding.</p> <p>The Contractor shall also maintain records of the imported components supplied to local manufacturers and actual utilization of the same in the manufacture of complete Equipment.</p> <p>The Contractor shall be fully responsible for any loss or misuse of these components in manufacture of Equipment.</p>	<p>As mentioned vide above point 1 (Sr No 3), we are a foreign company do not know taxation on your project and if there is any exemptions on the Import project it will be benefitted to Purchaser MMRC and it depends on the Registration in your particular state how it have been dealt and nature etc. If state govt has given exemption on Custom/import, taxes then there will be no applicability of such expenses. Such responsibility do not serve anything but only confusion and we could not concentrate on our actual nature of Business.</p> <p>Please amend this accordingly.</p> <p>Also Statement no-1 Pricing format, Appendix A for Tax duty breakup may please modified by removing Custom duty applicability as requested. May be amended to DAP basis.</p>	<p>Same remarks as in Sr No 11.</p> <p><b>Bid conditions prevail.</b></p>
13	Part 1 Section IV-B	1.2.7	3 of 25	<p>MML3 Metro Project is eligible for availing concessional duty benefits as per Customs Tariff Act for Project Imports and Bidders shall refer to Project Import Regulation 1986 (PIR), Section 5, read along with Customs Manual chapter 5, Para 3,4 &amp; 5. After award of Contract, at the request of the Contractor, MMRC shall fulfil its obligation towards registration of Contract (Sec 5 of PIR), and approval of the items for import as the Sponsoring Authority (Sec 5 (4) of PIR). However, the responsibility for providing all information, technical details documentations, obtaining of licences as may be required for registration (para 5, Chapter 5 of the Manual) and all logistics and other arrangement in connection with the import of material shall remain with the Contractor as per the Bid conditions. MMRC shall not be the importer of the Equipment or any part of it.</p>	<p>How can the Supplier avail concessional Customs Duty available for Projects under the DDP Supply Terms as Under Cl. No. 1.4.6 (b), Page 6 of 25, The Customs Clearance is under the Vendor Scope?Please clarify.</p>	<p><b>Please refer Sr No 3 of Addendum No. 1.</b></p>
14	Part 2 Section VI-A		9 of 95	<p>To fulfil the Contractor's obligations during the Installation, Testing &amp; Commissioning period, the Contractor shall nominate experienced Site Engineer and organize deployment before undertaking Installation, Testing &amp; Commissioning in the Depot.</p>	<p>TECHNICAL STAFF AVAILABILITY: from what Stage, which particular staff is to be made available for various activities and various stages of the Project ? This is required to calculate the cost of Staff for the Project.</p>	<p><b>Bid conditions prevail.</b></p>
15	Part 2 Section VI-A	7.7.4 (b) & (c)	29 of 95	<p>Within 14 days of the installation of any software into the Permanent Works by the Contractor, the Contractor shall submit to the PM for retention by the Employer and the PM, two backup copies of the software, which shall include, without limitation:</p> <p>b) All source and executable codes;</p> <p>c) All design documentation relating to the software;</p>	<p>Please note that all source and executable codes and design documents related to software are manufactures intellectual property which cannot be shared in any case.</p> <p>Hence, we request you to delete this requirement.</p>	<p>These clauses are applicable only for delivery of source codes of the software developed specifically for this project. Executable codes of all softwares shall also be delivered.</p> <p><b>Bid conditions prevail.</b></p>



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16	Part 2 Section VI-A	Chapter – 7, Cl. No. 7.6.4	28 of 95	7.6.4 All software(s), irrespective of Contractor's own software or of sub-suppliers, shall be compatible with latest version of Windows Operating software and shall also have upward compatibility. In case, the compatibility of installed software(s) with latest version of Windows is not available, the Contractor shall replace the installed software(s) that are compatible with latest version of Windows OS without downgrading the Equipment performance. Contactor shall commit to support and supply free of cost any special hardware / software required for ensuring compatibility with new version of Windows for at least a period of 5 years beyond DLP of the Equipment.	SOFTWARE CHANGES : How the Vendor can predict what software changes in Windows Schedule are likely to come in the next 5 years and whether the PLC Manufacturer(s) have changed/upgraded the Software to match the Windows upgradation ? The Upgradation of the PLC Software by the PLC Manufacturer is beyond the Vendor's Control.	<b>Bid conditions prevail.</b>
17	Part 2 Section VI-A	Chapter – 7, Cl. No. 7.1.3	27 of 95	7.1.3 The Contractor shall provide all tools, Laptop computers or any special device to upload / download the software, Control data, equipment, manuals and training necessary for the Employer and Project Manager to maintain and re-configure all software provided under this Contract. The documentation of software may be supplied after the expiry of the warranty period, under terms and conditions to be mutually agreed at Contract pre-award stage.	How Many Laptops of what configuration are required to be supplied by the Pit Jacks Supplier?	<b>Please refer Sr No 4 of Addendum No. 1.</b>
18	Part 2 Section VI-A	Chapter-2 Clause 2.8.3 ©	6 of 95	(c) Provide 3D modeling in Revit (Compatible with BIM system) of the Facilities after finalization of the design for incorporation in the Depot BIM model. 3D model shall include foundation, trenches, cable ducts etc. associated with the Equipment. The Contractor shall obtain Project Manager's NoNO of the 3D Model.	.stp files can be provided, which are interface files created by 3D Inventor. These files can be used by others for BIM Modeling. Please clarify ?	Please refer Clause 6.2 of Appendix 6, Section VI-A, Part 2. <b>Bid conditions prevail.</b>
19	Part 2 Section VI-A	Chapter-7	27,28,29 - 95	7: SOFTWARE QUALITY ASSURANCE PLAN:	SOFTWARE QUALITY ASSURANCE PLAN: the Whole Chapter cannot be applicable, please clarify what part is applicable ?	The Software Quality Assurance is required for all software specifically developed for this project. For the already developed and tested Software, the Bidder has to produce its safety certificate. <b>Bid conditions prevail.</b>
20	Part 2 Section VI-A	Appendix- 6, Clause No 6.2	78 of 95	The Contractor shall get Civil & Architecture BIM Model of the Depot Building using software REVIT 2017 or latest. The Eqpt Contractor shall incorporate his BIM model of the Equipment in the Civil & Architecture BIM Model using software the same software. Wherever Civil & Architecture Model is not available, the Contractor shall submit the BIM model of the Equipment after finalization of the design. The BIM Model of the Equipment shall include foundation, trenches, cable ducts and all parts of the Equipment etc. whichever is applicable. Notice of No Objection of REVIT model shall be obtained by the Contractor from Project Manager.	BUILDING INFORMATION MODELLING: .stp files can be provided, which are interface files created by 3D Inventor. These files can be used by others for BIM Modeling. Please clarify ?	Same remarks as in Sr No 18 <b>Bid conditions prevail.</b>



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21	Part 2 Section VI-B	2.3.1 (i)	04 of 29	Rolling Stock Parameters: i) Weight of Car: 42 ton	In all three clauses, the weight of rolling stock mentioned are contradictory to each other.  Please clarify the same.	Weight of car shown as 42 tons is only indicative. Final figure is to be obtained through interface during design stage.
		3.4.4	13 of 29	Two pairs of body supports shall be capable of supporting a 45 T railcar.	In all three clauses, the weight of rolling stock mentioned are contradictory to each other.  Please clarify the same.	The Equipment shall be designed for i) body supports to take a load of 45 tons, and ii) for passage of rail cars/ any other vehicle over the track above the underfloor lifting system upto a load of 48 tons.
		3.4.5 (b)	14 of 29	While the Jacks are at the lowered positions, the shop area, where the pit Jacks are located, shall provide a safe and clear passage for railcars of weight maximum 48 tons.	In all three clauses, the weight of rolling stock mentioned are contradictory to each other.  Please clarify the same.	<b>Bid conditions prevail.</b>
22	Part 2 Section VI-A	Clause No. 2.8.1	6 of 95	2.8.1 Employer is in the process of implementing an Enterprise wide cloud-based IT project titled "Integrated Project Management Platform". The IT project envisages following application stack:  a) Planning, Progress, Performance reporting and Scheduling services using Primavera Project Planner (P6) program or MS Project convertible to .MPX or .XML of the latest version  b) Collaborative Document Control and Management Services (using Proliance and Bentley Project Wise)	What is Primavera Project Planner ? What is Proliance and Bentley Project ? How much IT is required to be used as there can be high Cost Implications ?	<b>1) Primavera (P6) of Oracle:</b> Primavera is planning and scheduling software used for Project management & scheduling of various activities for effective execution of work. Submissions are required as per Clause 2.8.1 (a), Chapter 2, Section VI-A, Part 2.  <b>2) Proliance of Trimble:</b> We are using Proliance for Project Management and Information System, used as common platform for communication between GC, Contractor and MMRC. It can be accessed from anywhere through internet connectivity. Realtime document status, complete electronic project record is available on it. No licence is required. Access permission shall be given by the Employer.  <b>3) ProjectWise of Bentley</b> (Revit and Navisworks) is used as single platform between GC, Contractor and MMRC for the BIM work information. Complete electronic record of BIM work is available on it. Software Licence of ProjectWise with Access permission shall be given to the Contractor by the Employer.  4) The Bidder shall assess on its own the IT requirement and the cost assessment. <b>Bid conditions prevail.</b>
23	Part 2 Section VI-B	2.9 (a)	08 of 29	Equipment Maintenance during DLP  The maintenance service during DLP shall last up to the completion of twenty – four (24) months from the date of Operational Acceptance of the Equipment. This period shall get extended by no of days, the equipment remains defective and unable to perform its functions for the faults attribute to the Contractor during the above period.	These is a critical equipment's and any small mistake in operations can also put it in non – functional condition.  Hence, extension of warranty endlessly under such conditions cannot be acceptable. In the view of the above, we request you to kindly modify the clause.	The extension in DLP is against faults attributable to the Contractor as is already clear in clause 2.9(a). <b>Bid conditions prevail.</b>



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24	Part 2 Section VI-A	Clause No. 6.1.5	77 of 95	<p>6.1.5 The documents shall be submitted in the following software unless otherwise stated, for the various electronic submissions required. Any formulae / micros / programs used therein shall not be hidden / masked and must be visible and transparent without any compromise and shall be validated for the submissions. The following software compatible for use with Intel-Windows based computers shall be used, unless otherwise stated, for the various electronic submissions required:</p> <p>Document Type: Electronic Document Format                      Text Documents: MS office Professional (latest version)                      Spread Sheets: MS office Professional (latest version)                      Data Base Files: MS office Professional (latest version)                      Presentation Files: MS office Professional (latest version)                      Programs: Primavera enterprise/M S Project (latest version)                      AutoCAD Graphics: AutoCAD 2016 OR latest                      Photographic: Adobe Photoshop CC (2015.5) OR latest                      Desktop Publishing: Adobe Page Maker 7.0 OR latest                      CADD Drawings: AutoCAD 2016 OR latest</p>	<p>Please clarify which are the Applicable Versions in today's context of different cited software ?                      The PLC Manufacturers, Software upgradation for programming is beyond the control of the Vendor Supplier(s) and It's compatibility cannot be assured by the Vendor.</p>	<p>The Clause defines the types of software to be used while communicating with the Employer for different types of documents.  <b>Bid conditions prevail.</b></p>
25	Part 2 Section VI-A	Clause No. 9.6.5 (a) – (b)	94 of 95	<p>9.6.6 Bolts, Studs, Nuts and Washers:</p> <p>a) All bolts, studs and nuts shall be to an Approved Standard and to metric dimensions and shall generally be of stainless steel. Those subject to vibration, high temperature or pressure shall be of high tensile material to the Approval of the Employer's Representative. The use of black grade bolts shall be permitted only at approved locations of minor importance.</p> <p>b) Bolts, studs, nuts and washers shall be made of free machining quality stainless steel. Bolts, studs and nuts shall be suitably machined. Rolled threads will be considered acceptable if conforming to an Approved standard. Washers shall be provided under all nuts and also bolt heads where appropriate. Bolts and studs shall protrude by at least one thread pitch beyond the outside face of nuts.</p>	<p>What fixings screws are being referred here ? If Stainless Steel ,what grade – 304 or 316 ?                      Springs made of Phosphor bronze or nickel silver are not feasible as Cost Implications are very high, please kindly clarify ?                      Please kindly clarify Approved Corrosion resistant material for Pivots etc ?                      Stainless Steel Nut-Bolts have problems of sticking and are not available of high strength, which is required for the Pit Jacks manufacture &amp; Assembly. Passivated &amp; Carborised/Zinc electroplated nut-bolts of high strengths are used in the Assembly of Pit Jacks</p>	<p>Please refer Clause No 2.3.5, Section VI-B, Part 2.  <b>Bid conditions prevail.</b></p>
26	Part 2 Section VI-A	Clause 5.1.3	17 of 95	<p>5.1.3 All designs specifically produced for this Contract shall become the property of the Employer and shall be clearly identified as such on all documents.</p>	<p>Why the "Design(s) Produced" by the Vendor/Supplier for this Project should become the Property of the Employer for which, the Employer has not specifically paid ? Under the Intellectual Property Rights Act, it is the property of the Vendor who has developed It and not of the Employer, who is using it.</p>	<p>Please refer Clause 1.3.3, Section IV-B, Part 1.  <b>Bid conditions prevail.</b></p>



**MUMBAI METRO RAIL CORPORATION LIMITED**

**Mumbai Metro Line-3 Project**

**IFB No: MM3-CBS-DEQ-9-05**

**Design, Manufacture, Supply, Installation, Testing & Commissioning of A) Synchronized Under Floor Lifting System B) Synchronized Mobile Lifting Jacks, and C) Bogie Turn Tables**

**Response to Bidders' Queries (SET-1)**

Sr. No.	Part No. & Section No.	Clause No.	Page No.	Bid Document Clause Description	Bidder's Query /Clarification	MMRC Response
27	Part 2 Section VI-B	Clause No. 2.3.1	4 of 29	<p>2.3.1 The Equipment shall be designed to suit the Rolling Stock and Track to be provided in the Project. The relevant parameters of Rolling Stock and Track are given below for reference purpose only. The Contractor shall reconfirm the required parameters from the Interfacing Contractors before finalization of the design of the Equipment.</p> <p><b>TENTATIVE ROLLING STOCK and TRACK PARAMETERS</b></p> <p>Rolling Stock Parameters:</p> <p>a) Width of Car : 3200 mm                      b) Length of Car (MC/TC) : 22240 mm                      c) Length of Car (DTC/DMC) : 22600 mm                      d) New Wheel Diameter : 860mm                      e) Fully worn Wheel Diameter : 780mm                      f) Height of coupler : 740- 815 mm                      g) Bogie wheel base :2600mm(max) / 2200mm(min)                      h) Distance between bogie centres :15100mm(max) / 14400mm(min)                      i) Weight of Car : 42 tons</p>	<p>Does it mean that there are different types of Trains running on the System ? Please kindly clarify.</p>	<p>The Bidder shall refer to Clause 2.3.1, Section VI-B, Part 2 where major Rolling Stock and Track parameters are stated.</p> <p><b>Bid conditions prevail.</b></p>
28	Part 2 Section VI-B	3.3.2	12 of 29	<p>Each bogie hoist shall be raised or lowered by 4 lifting columns. Each Lifting column shall consist of a spindle-lifting element, a lifting beam, guiding box, one automatic following gap cover and associated electrical equipment.</p>	<p>spindle fixed with 4 mechanical columns which always lift/lower operate together.</p> <p>The bogie lifters are based on our proven design that reduces the number of lifting columns with spindle systems and motors from 2 to only one heavy 5.5KW (see details below).</p> <p>This system is already supplied to 2 depots in DMRC in 2010 (and Kochi Metro too) is well proven and all sets working well for years, DMRC letter attached confirming good performance of these 2 sets. Therefore Delhi Metro all tenders for Pit Jacks for Phase-3 Depots, Kochi Metro, Yamuna Depot , Greater Noida Metro,Lucknow Metro, recent Mumbai Metro line2 Charkope depot , Kolkata Metro ,even for Indian Railway tender RVNL tender page attached etc as well as accepted and allowed this well proven design of Windhoff equally to other manufacturers design. Please find attached respective tender spec pages for all above clients to make MMRC understand how all manufacturer design are evaluated equally.</p> <p>We hope MMRC will also see the overall cost advantage of this proven design including civil works costs and allow this design equally as done by other Metros.</p> <p>Please modify clause 3.3.2 suitably to                      "Each bogie hoist shall consist of either four lifting spindle elements, which are always operated together or central hoist of proven design. "</p>	<p>Please refer Sr No 4 of Addendum No. 1.</p> <p><b>Bid conditions prevail.</b></p>





**MUMBAI METRO RAIL CORPORATION LIMITED**

**Mumbai Metro Line-3 Project**

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**Response to Bidders' Queries (SET-1)**

Sr. No.	Part No. & Section No.	Clause No.	Page No.	Bid Document Clause Description	Bidder's Query /Clarification	MMRC Response
29	Part 2 Section VI-B	Clause 3.3.4	3 of 29	3.3.4 Each body support shall have a supporting pad for lifting railcar body at its jacking points. Each pair of body support shall consist of two lifting spindle elements, which may be operated together or individually. The arrangement shall provide a clear passage for transport of bogie and bogie tractor underneath the raised railcars. Two pairs of body supports shall be capable of supporting a 45 T railcar. The exact locations of jacking pockets on the Metro car shall be determined by interfacing with the Rolling Stock Contractor.	The Kinematic Envelope of the Bogie Shunter is required. Please specify.	Please refer to Clause No 3.4.4, Section VI-B, Part 2. <b>Bid conditions prevail.</b>
30	Part 2 Section VI-B	Clause 3.3.6	Page 13 of 29,	3.3.6 Electrical motors, gear box and other peripheral equipment inside the pit shall be installed at a height of more than 2.0 meters from the base level of pit to avoid damage to these equipment in case of water logging inside the pits. A maintenance platform shall be install at suitable height along with Ladder inside each pit for ease in maintenance of equipment inside the pit.	The Maintenance Platform is a new requirements with regards Pit Jacks System Installation(s) in India and so far has never been asked/supplied by any Pit Jacks OEM in any Metro System in India, please kindly re-confirm ? Also, does it need to be Hot Dip Galvanised or just Painted ?	This facility is required for ease of maintenance of equipment of jacks installed at height in the Pit and for safety of maintenance staff attending to the equipment. The Contractor shall develop suitable design of the maintenance platform for its sturdiness and long life. <b>Please refer Sr No 5 of Addendum No 1</b>
31	Part 2 Section VI-B	Clause 3.4.5 ( c )	14 of 29	The pit areas shall be covered with jack structures or galvanized Steel Chequered plates which should support workshop road vehicles of max weight 16 tons with axle load of max 8 tons. The maximum deflection of chequered plates shall not exceed 1/750 of the cover spans.	8 Tons Axle Load for cover plate override is quite high. Please clarify which workshop road vehicle weighs 16 Tons ? Other Metro(s) (DMRC) Standard Specs have Workshop Vehicles weighing 100 kN with maximum axle load of 60 kN. Please clarify ?	The requirements are based on local conditions. <b>Bid conditions prevail.</b>
32	Part 2 Section VI-B	Clause 3.4.6 ( d )	15 of 29	d) In case of failure of any one motor/control during hoisting operation, suitable mechanism shall be available to safely lower the rail car to floor level, preferably under power, for clearing the track.	Please kindly clarify that during failure of any one motor/control during hoisting operation, the lowering mechanism has to be under power, i.e. tandem coupled motor or lowering is acceptable manually by Ratchet Operation ? Please kindly clarify.	<b>Please refer Sr No 6 of Addendum No 1</b>
33				General	Can the JV Partner/Sub-Contractor be paid directly in INR for the Part Supplies being made by the JV Partner/Sub-contractor from India ?	The Bidders may refer to clause No 1.4 (a) of Section IV B- Pricing documents, Part 1, which is self explanatory and as per this clause Payment can be made to JV/Consortium Partners. No Payment shall be made to Sub- Contractor directly. <b>Bid conditions prevail.</b>
34	Part 2 Section VI-B	Clause 3.5.1. – (b) & ( e )	17 of 29,	b) FAT may be offered in ckd (complete knocked down) condition of the Assemblies/Sub-assemblies of the Machine.  e) The Contractor shall provide for all checks of supplies on his sub- Contractor's premises prior to delivery of these supplies to his workshops.	Is it that the Load Test (Manually Operated) is to be performed at Works and witnessed by the Client whereas the Supplies are in CKD Condition ?	Clauses 3.5.1 (b) & (e), 3.5.3 are self explanatory. These tests are classified under the heading of "In-manufacturer's-plant" and "After Assembly". <b>Bid conditions prevail.</b>
35	Part 2 Section VI-B	Clause 3.5.3. – (b)	17 of 29,	b) Static tests: The Jacks shall require static tests according to EN1493. Measurement of deflections shall be recorded.	When & where the Static Load Test (1.5 Times the Nominal Load) is to be performed as per EN1493 ?	At manufacturer's plant. <b>Bid conditions prevail.</b>
36	Part 2 Section VI-B	Clause 4.5.5. (b)	22 of 29	b) Each jack shall be provided with a levelling synchronization system ensuring the control and automatic correction of the height of the lifting claws and in no case the difference of heights between any two claws shall be more than 5 mm. This system shall also detect any obstacle or mechanical locking.	For a 8-Cars Mobile Jacks System, the Tolerance of 5mm Synchronization can only be achieved using Inverters/Variable Frequency Drives (VFD). Please kindly clarify ?	It is a design build contract. The Contractor is required to design the Facilities to meet the Employers Requirements. <b>Bid conditions prevail.</b>



**MUMBAI METRO RAIL CORPORATION LIMITED**

**Mumbai Metro Line-3 Project**

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**Response to Bidders' Queries (SET-1)**

Sr. No.	Part No. & Section No.	Clause No.	Page No.	Bid Document Clause Description	Bidder's Query /Clarification	MMRC Response
37	Part 2 Section VI-B	Clause 5.4.3 (b)	28 of 29	b) The design of each turntable shall have the roll over capacity of 25 Ton with maximum axle load of 12.5 Tons.	What override capacity of the cover plates is required for the Bogie Turntables ?	<b>Please refer Sr No 7 of Addendum No 1.</b>
38	Part 3 Section IX	Appendix 4	15 of 20	"The Contractor shall be required to submit with its Bid a detailed program, normally in the form of a bar chart, showing how and the order in which it intends to perform the Contract and showing the key events requiring action or decision by the Employer. The attached schedule shall adhere to the Time(s) for Completion as given in key dates in Appendix 1, Section VI-A, Part 2. The whole of the works shall be completed and delivered in stages (key dates) within time stipulated as shown in Appendix 1, Section VI-A, Part 2."	When the Time Schedule Bar Chart as per prima vera Planner 6 CPM Scheduling is to be submitted? At the Tendering Stage or after the Order ?	Scheduling information through Primavera is to be given after award of contract. <b>Bid conditions prevail.</b>
39	Part 3 Section IX	Appendix 4	13-14 of 20	INSURANCE	INSURANCE: There are various types of Insurances required but the Liability Amount of each type is not specified anywhere ? The estimate of Amount is required to calculate the premium liability.	The Bidding documents of Appendix 3 of section IX, Part 3, are self explanatory. <b>Bid conditions prevail.</b>
40	Part 3 Section IX	Section IX	17 of 20	2) Electricity, water and compressed air, if available and in a position to be offered for use, shall be provided by the Depot Civil Contractor as per the standard rates. However, the Contractor shall keep his arrangements ready and available for commissioning the Facilities.	POWER FOR COMMISSIONING : How the Pit Jacks Vendor/Supplier can provide Electricity Power for Commissioning ? it is not feasible to provide 250 Kw power required for commissioning of 64 Nos. Motors ?	<b>Please refer Sr No 8 of Addendum No 1.</b>
41	Part 3 Section IX	Schedule No.3	8 of 20	Schedule No. 4. Installation, Testing & Commissioning, and Other Services The amount quoted in Price Schedule No. 4 in respect of Installation, Testing & Commissioning Services shall be paid as under: 1) 70% of the total or pro-rata Price quoted in Schedule No 4 for the respective Equipment after completion of Installation, Testing & Commissioning as per Clause 25.1 (excluding Guarantee tests), Section VII, Part 3, completion of training of O&M staff of the Employer and on receipt of invoice with documents as given below: a) Signed/ certified commercial Invoice in duplicate, b) Completion Certificate issued by the Project Manager, c) Completion of Testing and Commissioning of the Facilities as per Clause 25.1 (excluding Guarantee tests) Section VII, Part 3. d) Certificate of completion of training to Employer's O&M staff. e) Submission of Training Manual, O&M Manual and Spare parts catalogue, 2) 30% of the total or pro-rata Price quoted in Schedule No. 4 for the respective Equipment on, completion of all other Contractor's obligations on issue of Operational Acceptance Certificate/ deemed Operational Acceptance and on receipt of the following documents as below: (a) Signed/ certified commercial Invoice in duplicate, (b) Certificate of completion of Contractor's all obligations under this Contract.	What is the significance of the Percentage break-up as per the Said Table with regards to Schedule No.4. Installation, Testing & Commissioning, and Other Services ? Please kindly clarify.	Bidding documents are clear and self explanatory. <b>Bid conditions prevail.</b>
42	Part 4			List of Drawings	The drawings provided in the tender document are not readable. Hence, we request you to kindly provide us drawings with high resolution.  Also, please provide Kinematic Envelope of train.	The drawings provided in the RFP are only indicative and attached again with response sheet. Final drawings are to be obtained from Project Managers/Interfacing Contractors after the Award of Contract.  <b>Bid conditions prevail.</b>



## MUMBAI METRO RAIL CORPORATION LIMITED

Mumbai Metro Line-3 Project

IFB No: MM3-CBS-DEQ-9-05

Design, Manufacture, Supply, Installation, Testing &amp; Commissioning of A) Synchronized Under Floor Lifting System B) Synchronized Mobile Lifting Jacks, and C) Bogie Turn Tables

Response to Bidders' Queries (SET-1)

Sr. No.	Part No. & Section No.	Clause No.	Page No.	Bid Document Clause Description	Bidder's Query /Clarification	MMRC Response
43				VENDOR CONCERN: General	What about the Project Time Over-run for MMRC Project ? there are liquidated damages on the Vendor incase of delays in his part, what about the delays, time over-runs by the Employer ? how will it be compensated ? the Vendor is not asking for any escalation(s) but, the cost increase due to time over-run.	Please refer to Clause 40, Section VII, Part 3 (Extension of Time for Completion) for details. <b>Bid conditions prevail.</b>
44				VENDOR CONCERN: General	Is the PLC Basic Software to run the Equipment Programme Application to be provided by the Vendor, which is not part of the PLC Programme ?	Software needed for running the PLC Programme shall be provided by the Bidder. <b>Bid conditions prevail.</b>
45				VENDOR CONCERN: General	How the 3-D Modeling through the Revit Clash Detection through Navis Works (DIM Solution) Applicable to the present Tender IFB No. MM3-CBS-DEQ-9-05 ?	Please peruse Clause 2.8.1, Chapter 2 and Clause 6.2, Appendix 6, Section VI-A, Part 2 for details. <b>Bid conditions prevail.</b>

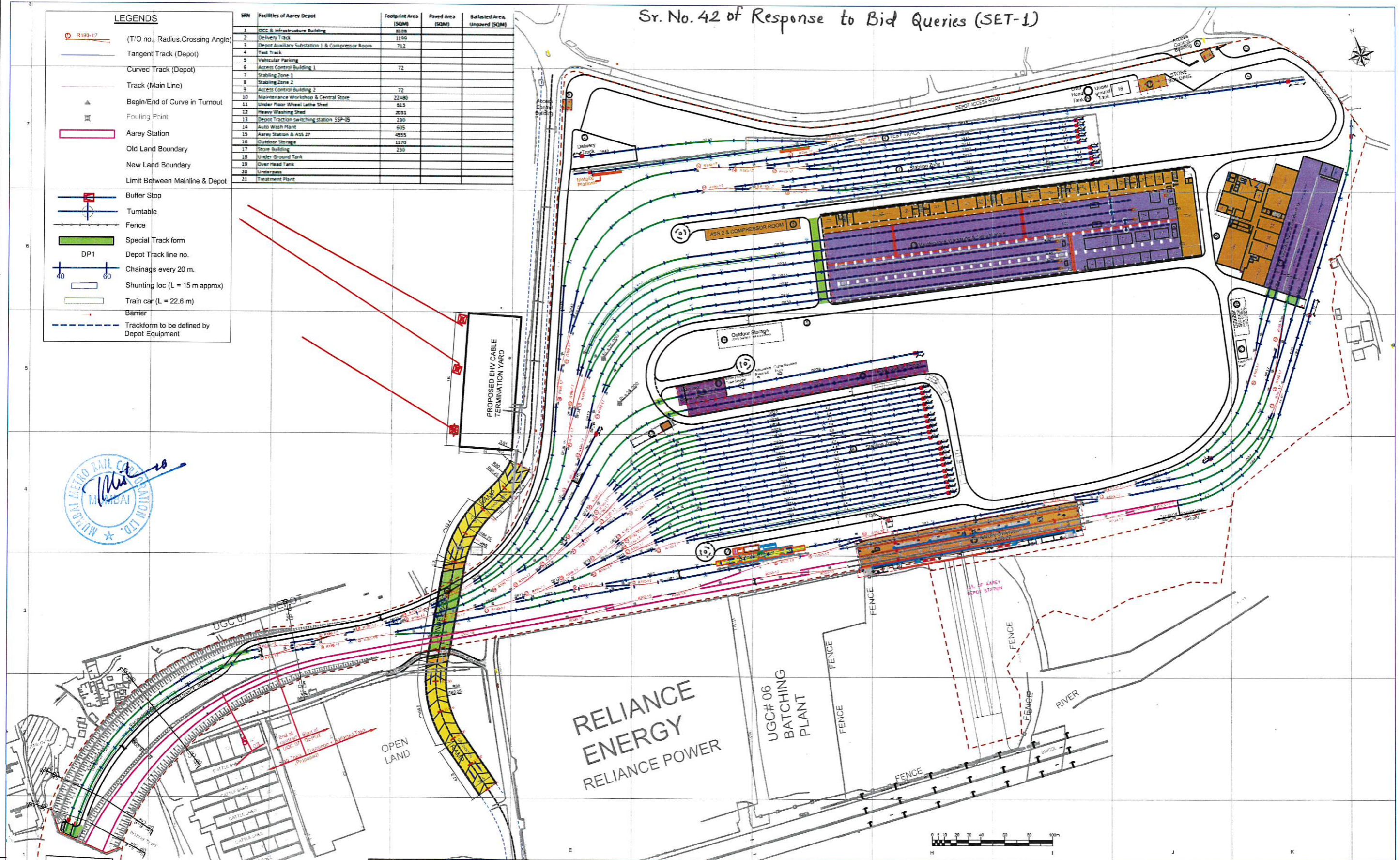


Sr. No. 42 of Response to Bid Queries (SET-1)

LEGENDS

- (T/O no., Radius, Crossing Angle)
- Tangent Track (Depot)
- Curved Track (Depot)
- Track (Main Line)
- Begin/End of Curve in Turnout
- Fouling Point
- Aarey Station
- Old Land Boundary
- New Land Boundary
- Limit Between Mainline & Depot
- Buffer Stop
- Turntable
- Fence
- Special Track form
- Depot Track line no.
- Chainage every 20 m.
- Shunting loc (L = 15 m approx)
- Train car (L = 22.6 m)
- Barrier
- Trackform to be defined by Depot Equipment

SRN	Facilities of Aarey Depot	Footprint Area (SQM)	Paved Area (SQM)	Ballasted Area, Unpaved (SQM)
1	OCC & Infrastructure Building	8125		
2	Delivery Track	1199		
3	Depot Auxiliary Substation 1 & Compressor Room	712		
4	Test Track			
5	Vehicle Parking			
6	Access Control Building 1	72		
7	Stabling Zone 1			
8	Stabling Zone 2			
9	Access Control Building 2	72		
10	Maintenance Workshop & Central Store	22490		
11	Under Floor Wheel Lathe Shed	813		
12	Heavy Washing Shed	2031		
13	Depot Traction switching station SSP-05	230		
14	Auto Wash Plant	605		
15	Assembly Station & ASS 27	4955		
16	Outdoor Storage	1170		
17	Store Building	230		
18	Under Ground Tank			
19	Over head Tank			
20	Underpass			
21	Treatment Plant			



General Consultants :

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Notification :

A  B  C

As noted in the DSR No. dated \_\_\_\_\_

A : Objection, A complete reevaluation is required.  
 B : No Objection with comments.  
 C : Notice of No objection.

Assessor	Discipline Leader	Engineer

Rev.	Date	Drawn	Description	Designed	Checked	Approved
3						
2						
1	DD.MM.YYYY					

IC / Detailed Design Consultant :

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Project Title : Mumbai Metro Line - 3  
 Detailed Design Consultancy and Construction for Depot of Underground MML - 3

Designed : AK    Checked : KT    Approved : SC

Scale : \_\_\_\_\_    Drawn : SP    Date : \_\_\_\_\_

MUMBAI METRO RAIL CORPORATION LTD.  
 Mumbai Building, Plot No. R-13, E-Block,  
 Bandra Kurla Complex, Bandra (East), Mumbai 400051.

Drawing Title : Aarey Depot Masterplan

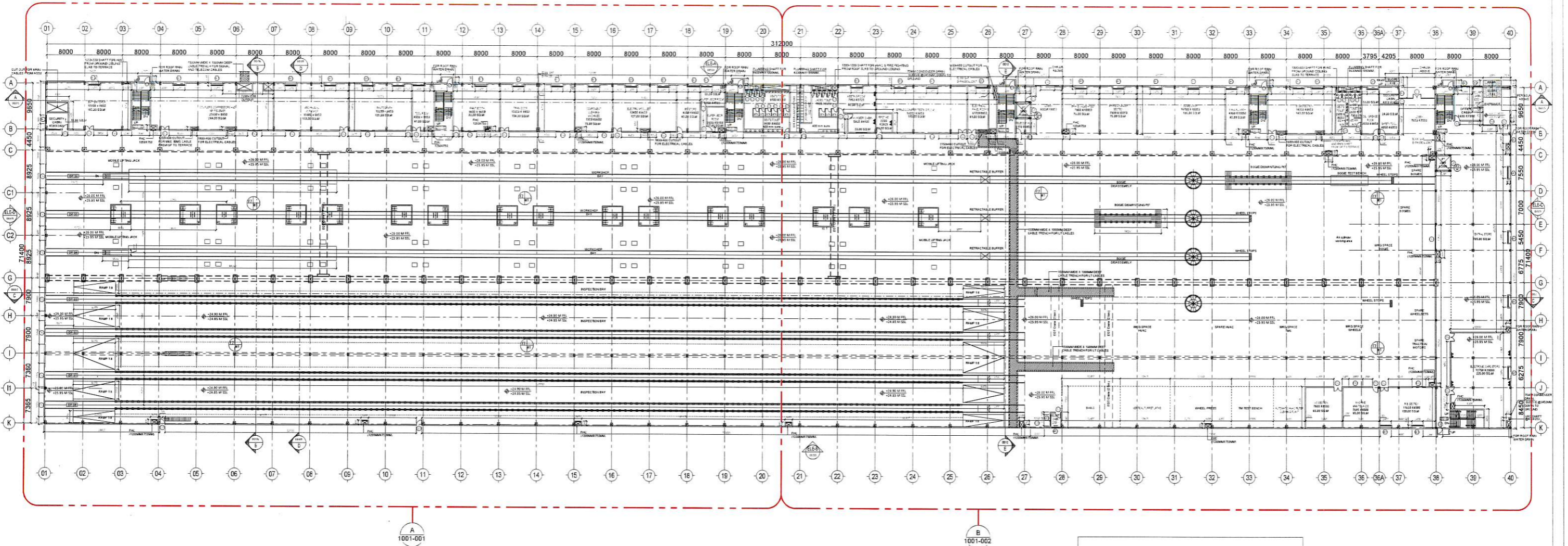
Drawing No. : MML-3-CBS/MR/C/IC/DEP/AR/06    Rev. DWG Status

P-Preliminary, D-Definitive, C-Construction Reference, W-Working Drawing

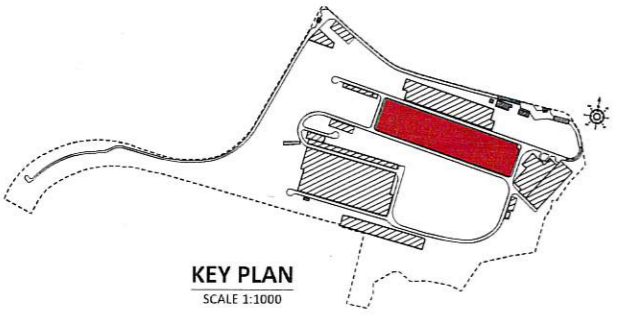
CAD File Name : MML-3-CBS/MR/C/IC/DEP/AR/06

NOTES :-

Sr. No. 42 of Response to Bid Queries (SET-1)



2 GROUND FLOOR PLAN  
SCALE 1:800



MAINTENANCE WORKSHOP & CENTRAL STORE BUILDING						
SCHEDULE OF OPENING						
NO	NAME	WIDTH	CLL	HEIGHT	UNTEL	NOS
D1	D2	1800MM	00	2450MM	2450MM	2
D2	D3	1200MM	00	2450MM	2450MM	4 NOS
D3	W2	1200MM	900	1500MM	2450MM	2 NOS
D4	V1	3000MM	3050	600MM	2450MM	17 NOS
D5	V2	2475MM	00	600MM	2450MM	2 NOS
D6	RS1	3000MM	00	3600MM	3600MM	2 NOS
D7	RS2	5000MM	00	5000MM	5000MM	2 NOS

MAINTENANCE WORKSHOP & CENTRAL STORE BUILDING		
FLOORING		
NAME	CODE	
HARDENED FLOOR WITH EPOXY COATING	F7	

WALLS		
NAME	CODE	
GBC	W2	
WEATHER PROOF PAINT	WE	

Room Matrix		
SR	ROOM TYPE	PROPOSED SIZE (SQM)
MAINTENANCE WORKSHOP		
1	GROUND FLOOR	
2	BATTERY SHOP	145
3	SECURITY CABIN	15
4	COMPRESSOR COMPRESSORS AND AIR RECEIVER	344
5	MECHANICAL WORKSHOP	150
6	PANTOGRAPH	125
7	TOOL ROOM	41
8	PAINT BOOTH	52
9	TRAIN DOOR	154
10	COMPONENT CLEANING MACHINES	75
11	ELECTRIC MODULES	127
12	IBL STORE	45
13	SUPERVISOR ROOM	30
14	SUPER VISOR ROOM	17
15	GENTS TOILET	102
16	LADIES TOILET	70
17	MEETING ROOM	45
18	MANAGER CABIN	23
19	FIRST AID	13
20	SPRING & DAMPER TESTING ROOM	175
21	ELECTRICAL PANEL ROOM	41
22	SECURITY CABIN	10
23	TELECOM HUB	10
24	LOBBY	65
25	BRAKE VALVE - TEST	76
26	BRAKE CYLINDER SECTION	76
27	BOGIE WASH	186
28	MANUAL WASH	45
29	BOGIE SECTION	140
30	GENTS TOILET	28
31	LADIES TOILET	18
32	OIL / GREASE ROOM	32
33	SECURITY CABIN	10
34	SAFETY TOOL	24
35	LOBBY	58
36	OFFICE CABIN	32
37	SECURITY CABIN	8
38	ENTRANCE	29
39	CENTRAL STORE	705
40	ELECTRONIC CARD STORE	225
41	R.B. SECTION	100
42	MACHINE MAINTENANCE	65
43	AC SECTION	66
44	AUTOMATIC HVAC FILTER CLEANING PLANT	58
45	TM TEST BENCH	78
46	WHEEL PRESS	115
47	VERTICAL TURRET LATHE	93
48	BAKING	107
49	SECURITY CABIN	10
50	WORKSHOP SHED	16176



51	WHEEL PRESS	115
52	VERTICAL TURRET LATHE	93
53	BAKING	107
54	SECURITY CABIN	10
55	WORKSHOP SHED	16176
FIRST FLOOR		
56	DEPT CONTROL CENTRE	111
57	DEPT MEETING ROOM	45
58	E & M UPS ROOM	28
59	ONBOARD COMM	45
60	SER	128
61	5 LIFTS	52
62	TER	40
63	ELECTRONIC CARD WORKSHOP	115
64	SIGNALING ELECTRONIC ROOM	75
65	ANAL ROOM	123
66	WORKSTATION FOR ENGINEERS	96
67	IS MAINTENANCE, TECHNICAL STAFF, STORE	230
68	SPARE	50
69	BCU	75
70	DRIVE CONTROL UNIT	75
71	GENTS TOILET	102
72	LADIES TOILET	70
73	LOCKER	34
74	DINING HALL	115
75	DINING STORE	20
76	MEETING ROOM	175
77	TELECOM HUB	10
78	LOBBY	60
79	MANUAL LIBRARY	155
80	RECORDS OFFICE	76
81	HR OFFICE, ADMIN., ACCOUNTS OFFICE, TECHNICAL STAFF (HALL)	155
82	CHIEF WORKSHOP MANAGER	52
83	ASST. MANAGER	28
84	WAITING AREA	35
85	GENTS TOILET	102
86	LADIES TOILET	70
87	HR OFFICE, ADMIN., ACCOUNTS OFFICE(HALL)	155
88	MANAGER CABIN	13
89	MANAGER CABIN	13
90	MANAGER CABIN	13

REFERENCE DRAWINGS :-  
X-REF FILES :-

NOTES:-

- CONTRACTOR TO STUDY DRAWING & REVERT BACK IN CASE OF ANY DISCREPANCIES BEFORE EXECUTION
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED
- ALL DIMENSIONS ARE FROM UNFINISHED TO UNFINISHED SURFACES UNLESS OTHERWISE SPECIFIED
- DRAWING MUST BE SCALED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED
- DRAWING MUST BE READ IN CONJUNCTION WITH STRUCTURAL CONSULTANT
- THE SIZES OF ALL THE STRUCTURAL MEMBERS TO BE REFERRED FROM DRAWINGS OF STRUCTURAL CONSULTANT
- ALL CENTER LINE DIMENSIONS ARE WITH REFERENCE TO I.C.C.
- THE LEVELS SPECIFIED IN ALL THE DRAWINGS ARE FINISHED FLOOR LEVELS UNLESS OTHERWISE SPECIFIED
- PITS FOR EQUIPMENTS LIKE FIT JACKS, TEST BENCH, RETRACTABLE, BOGIE TEST BENCH, BOGIE DISMANTLING PIT, MOBILE LIFTING JACK TO BE KEPT ON HOLD

General Consultants:

**maple**  
MUMBAI METRO LINE-3  
GENERAL CONSULTANT

Notification:

A  B  C

As noted in the DSP No. dated \_\_\_\_\_

A: Objection. A complete resubmission is required.  
B: No Objection with comments.  
C: Notice of No objection.

Rev	Date	Drawn	Checked	Approved	Description
RD	21.01.2019	RD	AK	DK	WORKING DRAWING ISSUED
A	21.12.2018	RD	AK	DK	REVISED AS PER DSR DATED 26.11.2018. ISSUED FOR CONSTRUCTION
RC	15.10.2018	RD	AK	DK	REVISED AS PER DSR ON DEFINITIVE DRAWING

IC / Detailed Design Consultant:

**PRDECO**  
PRDECO Co. Ltd.  
30th Cross Street,  
Chennai - 600 086  
Tamil Nadu, India  
Tel: +91 44 24401000  
Fax: +91 44 24401001

**maple**  
DIP, Bldg Tower C  
DIP Cyber City, Phase II  
Gurgaon - 122 002, Haryana - India  
Tel: +91 124 4801000  
Fax: +91 124 4801001

**The Lawry Berger Group**  
103, 104th Fls.,  
Wing 10A, 10B  
Kohli Park, Mumbai - 400 051, India

Project Title: Mumbai Metro Line - 3  
Detailed Design Consultancy and Construction for Depot of Underground MM - 3

**MUMBAI METRO RAIL CORPORATION LTD.**  
Nandri Building, Plot No. R-13, 'E' Block,  
Bandra Kurla Complex, Bandra (East), Mumbai 400051.

Drawing Title: **MAINTENANCE WORKSHOP & CENTRAL STORE BUILDING**  
**GROUND FLOOR PLAN**

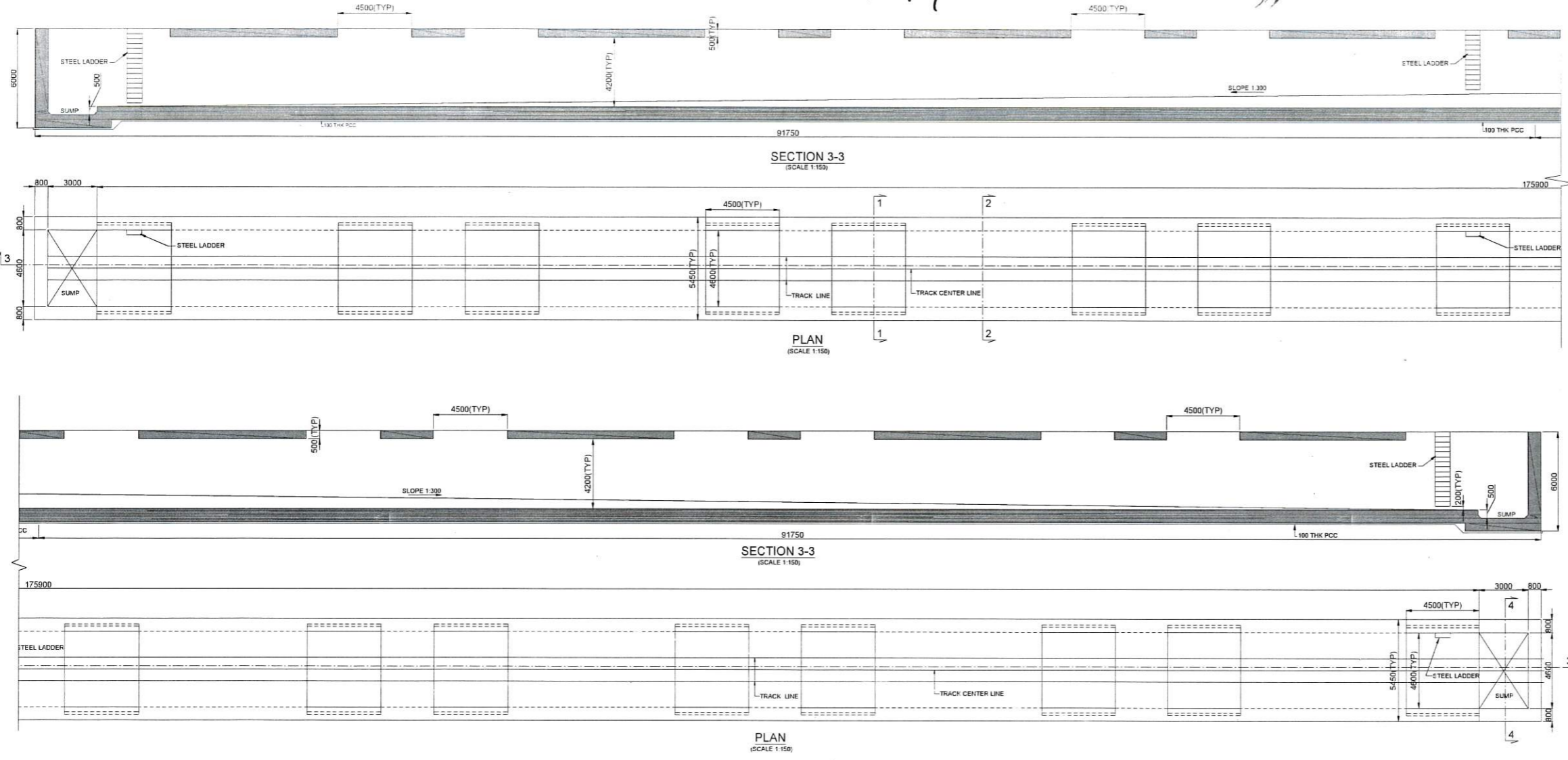
Drawing No.: DEPOT-ARP-D02-0001  
Rev: R0  
DWG Status: W

Scale: 1:400 (A1)  
Date: 21.01.2019

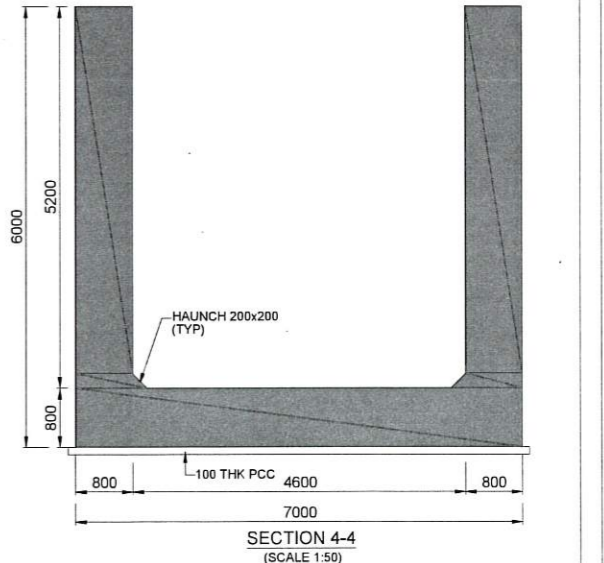
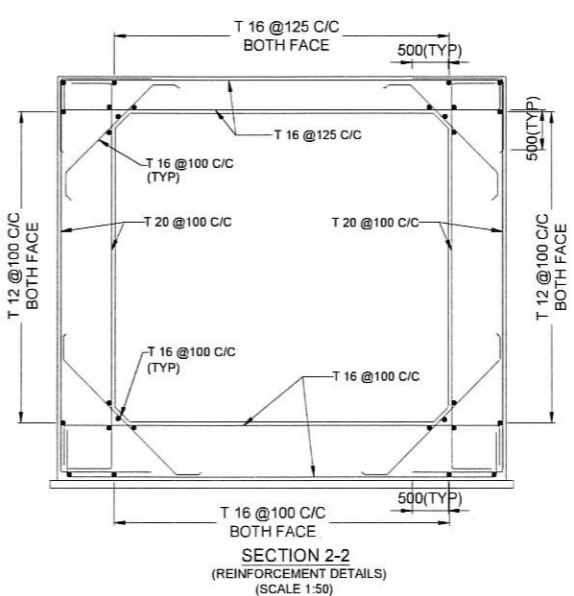
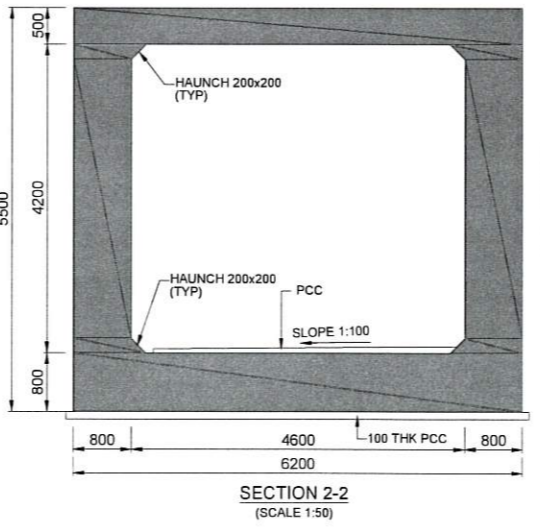
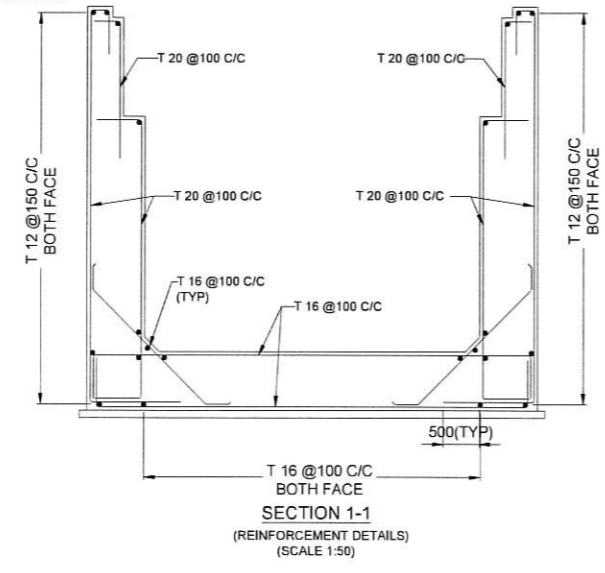
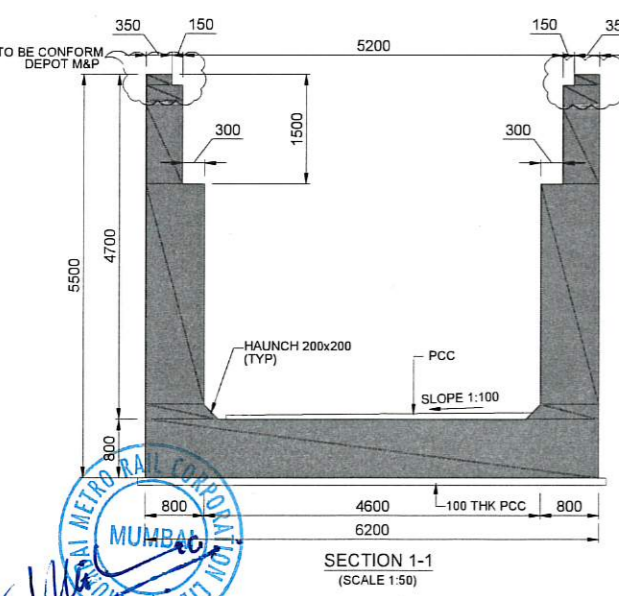
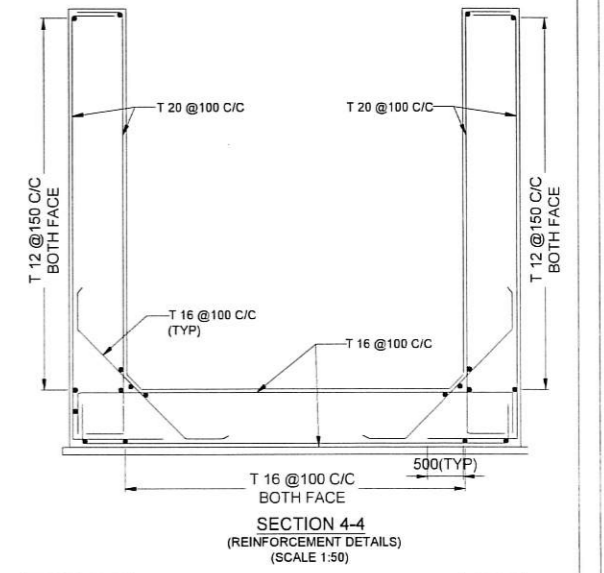
Project File Name: DEPOT-ARP-D02-0001

SHEET 2 of 3

Sr.No.42 of Response to Bid Queries (SET-1)



- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS WITH RESPECT TO MEAN SEAL LEVEL (MSL) UNLESS NOTED OTHERWISE(UNO).
  - ANY DISCREPANCY IN THE DRAWING SHALL BE BROUGHT TO ENGINEERS NOTICE & EXECUTED AFTER THE RESOLUTION OF THE DISCREPANCY.
  - SBC CONSIDERED IS 170 KN/M<sup>2</sup> AT 2M BELOW EGL.
  - IF EXCAVATED FINAL PIT DEPTH, DESIRED BEARING STRATA IS NOT AVAILABLE, EXCAVATE TILL REQUIRED STRATA & FILL THE EXTRA DEPTH WITH PLUM CONCRETE. PLUM CONCRETE SHALL BE 30% OF M20 & 70% OF STONE AROUND 300mm SIZE.
  - ANY UNDULATION IN THE EXCAVATED FINAL PIT LEVELS SHALL BE MADE GOOD & HORIZONTAL BEFORE PCC IS LAID.
  - GRADE OF REINFORCED CONCRETE USED SHALL BE M-35 (fck=35 MPa) CONFORMING TO IS-456-2000.
  - GRADE OF PLAIN CEMENT CONCRETE (PCC) SHALL BE M-20 (fck=20MPa) CONFORMING TO IS-456-2000.
  - REINFORCING BARS SHALL BE HIGH YIELD STRENGTH DEFORMED (HYSD) BARS OF Fe-500-D GRADE CONFORMING TO IS-1786-2008, WITH fy=500 MPa & ELONGATION 14% MINIMUM.
  - DEVELOPMENT LENGTH (LAP) "Ld" SHALL BE 50x DIAMETER OF BAR.
  - LAPS OF BARS SHALL BE STAGGERED AT LEAST 1.3 TIMES THE DEVELOPMENT LENGTH OF BAR.
  - DE-SHUTTERING TIME FOR THE FORM WORK SHALL CONFORM TO IS-456-2000.
  - CLEAR COVER THE REINFORCEMENT SHALL BE
    - a) BASE SLAB / WALL
      - EARTH FACING SIDE = 50 MM
      - NON- EARTH FACING SIDE = 30 MM
    - b) TOP SLAB = 30MM
  - APPROVED QUALITY READY MADE COVER CONCRETE BLOCKS SHALL ONLY BE USED OF GRADE M-35 MINIMUM.
  - PROVIDE 230MM THICK RUBBLE SOILING, IF REQUIRED
  - BEFORE EXECUTION OF WORK LEVEL TO BE CONFIRM FROM ARCHITECTURE DRAWING.



REFERENPBE DRAWING :-  
 REFERENPBE DRAWING :-  
 1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH MAINTENANCE WORKSHOP & CENTRAL STORE BUILDING DR.NO. DEPOT-ARP-D02-0001 - DEPOT-ARP-D02-0022  
 2. AAREY DEPOT MASTER PLAN - MML3/CBS/MMRC/IC/DEP/MP/100  
 3. BEFORE EXECUTION OF WORK ALL LEVEL AND LOCATION TO BE CONFIRM FROM ARCHITECTURAL DRAWING.

General Consultants : **maple**

Notification :  A  B  D  C

As noted in the DSP No. \_\_\_\_\_ date: \_\_\_\_\_

A. Objecter A Complete resubmission is required.  
 B. No Objecter with Comments.  
 C. Notice of No objecter.

Assessor: \_\_\_\_\_ Discipline: \_\_\_\_\_ Engineer: \_\_\_\_\_

Rev.	Date	Drawn	DESCRIPTION	Designed	Checked	Approved
-	17/07/19	SP	FIRST ISSUE	AE	AS	VF

IC / Detailed Design Consultant : **PADECO** **AECOM**

Project Title : **Mumbai Metro Line - 3**  
 Detailed Design Consultancy and Construction for Depot of Underground MM - 3

Designed: AB Checked: AS Approved: VF

Date: 17/07/2019

**MUMBAI METRO RAIL CORPORATION LTD.**  
 Nambri Building, Plot No. R-13, 1<sup>st</sup> Floor, Back,  
 Banara Kurla Complex, Banara (East), Mumbai 400051.

Drawing Title : **MAINTENANCE WORKSHOP  
 DETAILS OF JACK PIT AND TRENCH**

Drawing No. : **DEPOT-STR-D02-SKETCH-09**

CAD File Name : **DEPOT-STR-D02-SKETCH-09**



LEGEND  
 TYP - TYPICAL